Estimation of Artery Wall Viscoelastic Parameters Using Carotid Ultrasound Cine Images

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The carotid ultrasound cine images and PWV data of patients were used to derive diameter and pressure waveforms. Using a 3-element viscoelastic model, the wall viscoelastic parameters were estimated from the pressure and diameter waveforms and compared among patient groups with varying risk statuses for atherosclerotic cardiovascular diseases. Results showed a significant increase in arterial elasticity as risk status increased, with notable differences between low and high risk groups. Moreover, the viscous parameters exhibited a significant increase from the low to the intermediate risk group.